

## ABSTRACT OF THE INVENTION

An apparatus and method for selecting and recording multi-directional communication packet traffic in a compact manner in realtime while maintaining relative time between  
5 the selected packets passing in one direction and the selected packets passing in another direction. The apparatus includes a protocol interface, a block datapath, a record resource, and a trace merge memory. The protocol interface receives X and Y channel packets with interspersed  
10 idle times, segments the packets into time-aligned X and Y blocks, and eliminates idle times. The block datapath merges the X and Y blocks, then filters unneeded X and Y channel packets by purging the X and Y blocks from those packets. The record resource compares patterns for  
15 identifying the unneeded packets and trigger events. The trace merge memory records the time-aligned filtered merged block stream in a compact form for later analysis.